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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,795	11/14/2000	Harold G. Craighead	1153.010US1	8906

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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. BOX 2938  
MINNEAPOLIS, MN 55402

EXAMINER
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CHEU, CHANGHWA J

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 11/18/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/712,795

Applicant(s)

CRAIGHEAD ET AL.

Examiner

Jacob Cheu

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 27-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

1. Applicant's amendment filed on October 20, 2003 has been received and entered into record and considered. Currently, claims 1-61 are pending, claims 1-26 are under examination, claims 27-61 are withdrawn from further consideration.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-12, 14-19, 21, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Baselt et al.. (Proceedings of the IEEE 1997 85: 672-680)

With respect to claim 1, Baselt et al. teach a system in detecting an analyte of interest by use of cantilever bending on the antibody-antigen forces. (See Figure 3) The system disclosed by Baselt et al. comprises (1) a light source; (2) a structure having an immobilized binding partner, i.e. antibody or DNA probe sequence, on the cantilever; and (3) photodetector. (See Figure 1) Concerning the feature of "resonating under ambient conditions at a frequency based on the mass of said analyte" on the cantilever portion, it is considered as an intended use because applicant is not claiming a resonance structure under ambient condition, rather the claim recites a structure capable of resonating under the ambient condition. Inherently, the structure taught by Baselt et al. could resonate under the similar condition. Therefore no patentable weight is given. Similarly, the recited photodetector "provides an output corresponding to a resonant frequency of said structure" is a functional intended use. Accordingly, no patentable weight is given for consideration.

Additionally, Baselt's reference includes, multiple photodiodes, differential voltage signal, piezoelectric device, spectrum analyzer. (Figure 1, 2) Baselt et al. teaches

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immobilizing antibodies on the cantilever to detect bacteria, proteins, DNA or virus. (See Abstract; Figure 3)

With respect to claims 10 and 11, the instant claims recite the structure is *adapted* for vibrating under ambient conditions including either thermal noise, or ambient air vibrations. Since the instant invention is a product rather than method claim, the intended use, e.g. *adapted* for vibrating under ambient conditions, is not given patentable weight for considerations.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 20 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Baselt et al. in view of Lee et al. (USP 5807758).

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Baselt et al. references has been discussed above but fails to explicitly teach using a chelator as binding partner to bind a metallic iron analyte. Nevertheless, Lee et al. teach using the chelators as the recognizing and selectively binding molecules for metal irons in an immunoassays for analytes of interests. (See column 1, line 35-45) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the modified system Baselt et al. with the chelator as binding partners as taught by Lee et al., in order to detect metallic iron in a sample of interest.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baselt et al..

With respect to claim 26, applicants recite a disk-shaped member having a perimeter and a center region. It would have been an obvious matter of design choice to have the instant recited disk-shaped for analysis, since such a modification would have been involved a mere change in the shape of a component. A change in the shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955)

### ***Response to Applicant's Arguments***

8. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.
9. Applicant argues that the combination of Land and Baselt fail to teach or suggest "wherein said structure has an immobilized binding partner that binds to said analyte on said second portion of the structure, wherein said structure resonates under ambient conditions at a frequency based on the mass of said analyte on said second portion," as recited in claim 1. (See Amendment page 11, Remarks, §103 rejection, second paragraph) Applicant's arguments have been considered but appear not persuasive. A recitation of the intended use of the claimed invention must result in a structural difference between

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the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

The instant invention is a product claim comprising three components, including (1) a light source, (2) a structure having an immobilized portion and a second portion capable of being illuminating by said light source where an immobilized binding partner can bind to the analyte on this portion, and (3) a photodetector. The “said structure resonates under ambient conditions at a frequency based on the mass of said analyte on said second portion” is considered intended use because applicant is not claiming a resonance structure under ambient condition, rather applicant claims a structure capable of resonating under the ambient condition. Alternatively, it is inherent that the structure taught by Baselt et al. could resonate under the similar condition. Therefore no patentable weight is given. Similarly, the recited photodetector “provides an output corresponding to a resonant frequency of said structure” is a functional intended use. Accordingly, no patentable weight is given for consideration. The prior art taught by Baselt et al. has all three main features mentioned above. Therefore, Baselt et al. reference anticipates the instant invention under 35 USC §102(b).

***Allowable Subject Matter***

9. Claims 2, 3, 13, 22-24 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.
10. The following is an examiner’s statement of reasons for allowance: no prior art teaches or suggests that a system of determining an analyte by using light source to measure the change of resonance of the complex of analyte-specific binding partner with analyte where the binding

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partner is immobilized on a cantilever. The closest prior art is the reference of Baselt et al.. However, Baselt et al. fail to teach measuring resonance frequency shifts in a cantilever to determine the analyte in a sample.

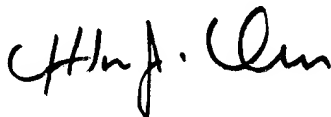
***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 703-306-4086. The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone number for the organization where this application or proceeding is assigned is 703-746-9434.

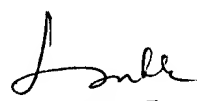
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3399.

Jacob Cheu  
Examiner



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November 7, 2003



LONG V. LE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1600  
11/07/03